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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,116	01/28/2004	Rollin M. Evans	P69033US0	9698

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EXAMINER

GAGLIARDI, ALBERT J

ART UNIT	PAPER NUMBER
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2884

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/765,116

Applicant(s)

EVANS, ROLLIN M.

Examiner

Albert J. Gagliardi

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 20-48 and 53-65 is/are rejected.
- 7) ☒ Claim(s) 49-52, 66 and 67 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Comment on Submissions

1. This office action is responsive to submissions of 28 January 2004 and including the preliminary amendment filed 17 February 2006.

Claim Objections

2. Claims 66-67 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend on any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

3. Claims 49-50 and 51-52 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims recite that there is no "calculating of the probabilities step" As such the claims are not more limiting in scope, but different in scope if not broader.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 20-65 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding claim 20-62, the claims are directed to a non-statutory process in that the acts of the claimed process manipulate only numbers or abstract concepts (radiation counts) or signals representing such, without a claimed practical application. To be statutory, a claimed

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process must either: (A) result in a physical transformation outside the computer for which a practical application in the technological arts is either disclosed in the specification or would have been known to a skilled artisan, or (B) be limited to a practical application within the technological arts. See MPEP 2106. In this case, the claimed process neither results in a physical transformation outside the computer, nor is limited to a practical application in the arts.

Regarding claims 63-65, the claims are directed to a non-statutory product because the machine does not produce any useful, concrete and tangible result.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 20-24, 32-36, 46, 47-48, 53-54, 59-62 and 63-65 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a establishing a relationship between a subset of at least two time slices or detectors when the number of time slices or detectors is greater than two, does not reasonably provide enablement for establishing a relationship between a subset of at least two time slices or detectors when the number of time slices or detectors is only two because it is not clear how one can establish a relationship with only one (a subset of two) datum point. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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9. Claims 20-24, 32-36, 45, 46, 47-48, 53-54, 59-62 and 63-65 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 20, 32, 46 and 63, the claims include at least a step of "calculating a correlation of measured counts" This limitation is unclear. It is noted that in general, a correlation is a relationship between two variables, but in the process as recited, there is an antecedent basis for only a single variable (measured counts). As such, the step of calculating a correlation is unclear. The examiner notes while it is known to establish a relationship of only a single variable (average, variance, standard deviation, for example), it is not clear from the claims or the disclosure whether the step of calculating is intended to be a step of calculating a variance, or whether there should be a another step relating to the establishment of another variable. For the purposes of this office action, the correlation will be considered as any relationship of the measured counts.

Regarding claim 45, the meaning of the e^{-1} expression is unclear (energy? the natural log?).

The remaining claims are indefinite on the basis of their dependency.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claims 20, 32, 46 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mallette (US 2003/0178575 A1).

Regarding claims 20, 32 @@@ *Mallette* discloses a method for detecting low-level radioactive sources moving past a detection apparatus comprising: measuring the number of radiation counts for each of at least two substantially distinct time slices (or detectors or both) occurring during the time period the source passes the apparatus; and calculating a correlation (i.e., relationship) of the measured counts with respect to either or all of the two time slices (§ 0035). Absent some degree of criticality, and as best understood, the type of relationship, such as and average, is viewed as a matter of routine design choice.

Regarding claim 46, the method recited in claim 46 is suggested by *Mallette* as applied above and is rejected accordingly. The examiner notes that, absent some degree of criticality, measuring multiple times slices with a detector (i.e., increasing the detection time) is viewed as an obvious design choice depending on the needs of the application since it is well known that, in general, increasing detection time allows for a more accurate determination.

Regarding claim 63, the apparatus recited in claim 63 is suggested by the method suggested by *Mallette* as applied above and is rejected accordingly.

12. Claims 21-22, 25-29, 33-34, 37-41, 47-48, 53-58 and 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Mallette* as applied above, and further in view of Kruse (US 4,509,042).

Regarding claim 21, although *Mallette* discloses determining whether or not the correlation (i.e., average) of the measured counts is above a certain threshold (i.e., compared to background), *Mallette* does not specifically disclose the correlation as calculating a probability

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that the radiation counts from each time-slice (or detector) came from background, and determining whether all the probabilities are above a threshold.

Regarding calculating a probability of the radiation counts being from background, those skilled in the art appreciate that it is well known to establish a probability of a radiation count as coming from background (or not from background) as a part of establishing a threshold. *Kruse*, for example, teaches a method of determining a probability of a radiation level being above background (inherent in step of establishing a variance of background at col. 5, lines 49-64), wherein the probability is based on the choice of a radiation level corresponding to and appropriate number of sigma (standard deviations) above the background level (col. 5, lines 60-64). *Kruse* teach that the determination of a probability and establishment of an appropriate threshold allows for tuning the system so as to allow for a desired false alarm rate (col. 5, lines 60-64). Therefore it would have been obvious, if not already inherent, to modify the method suggested by *Mallette* to further to further include a step wherein the correlation includes calculating a probability that the radiation counts from each time slice (or detector) came from background, and determining whether all the probabilities are less than (or equal to or above) a threshold, in order to establish an appropriate false alarm rate.

Regarding determining the probabilities from each time slice (or detector), although the method suggested by *Mallette* in view of *Kruse* suggested that the probability would be based on an average of all the times slices (or detectors), *Mallette* further discloses that, as a functionally equivalent alternative design choice, it is known in the art to establish a correlation using an appropriate filter method based on each of a plurality of detector and/or times slices (§ 0004) in order to effect a lower false alarm rate, though perhaps at the cost of lower speeds. Therefore, absent some degree of criticality, it would have been obvious to a person of ordinary skill in the

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art to modify the method so as to determine the probability individually for all of the time slices or detectors so as to allow for an even lower false alarm rate depending on the needs of the particular application.

Regarding claim 22, in the method suggested by *Mallette* in view of *Kruse* and the known prior art, the step of determining whether all of the probabilities are less than (or equal to or above) a certain threshold inherently includes determining whether at least two of the probabilities are less than (or equal to or above) a certain threshold.

Regarding claims 25-29, the method recited in claims 25-29 is suggested by *Mallette* in view of *Kruse* as applied above and rejected accordingly.

Regarding claims 33-34, the method recited in claims 33-34 is suggested by *Mallette* in view of *Kruse* as applied above and rejected accordingly.

Regarding claims 37-41, the method recited in claims 37-41 is suggested by *Mallette* in view of *Kruse* as applied above and rejected accordingly.

Regarding claims 47-48, the method recited in claims 47-48 is suggested by *Mallette* in view of *Kruse* as applied above and rejected accordingly.

Regarding claims 53-58, the method recited in claims 53-58 is suggested by *Mallette* in view of *Kruse* as applied above and rejected accordingly. The examiner notes that since a count may only be from a source or from background, a determination of the probability of one inherently determines the probability of the other (i.e., finding x , inherently finds $1-x$).

Regarding claims 59-60, in the method suggested by *Mallette* in view of *Kruse* as applied above, the choice of a particular threshold (as determined by a particular value of sigma) is a result effective variable that is considered a matter of routine design choice depending on the needs of the application and the desired false alarm rate.

Regarding claims 61-62, in the method suggested by *Mallette* in view of *Kruse* as applied above, the choice of a particular time slice width is a result effective variable that is considered a matter of routine design choice depending on the needs of the application and other factors including, for example, the desired false alarm rate, the expected level of background, the expected level of the source, and the distance of the detector from the source.

Regarding claims 64-65, the apparatus recited in claims 64-65 is suggested by the method suggested by *Mallette* in view of *Kruse* as applied above, and is rejected accordingly.

Claims 23-24, 30-31, 35-36, 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over by *Mallette* and *Kruse* as applied above, and further in view of Horrocks (US 4,059,762) and Iwatschenko-Borho *et al.* (US 2005/0029460).

13. Regarding claims 23-24, 30-31, 35-36, 42-44 in the method suggested by *Mallette* in view of *Kruse* as applied above, although the measuring is not described as occurring within a pre-determined energy window, those skilled in the art appreciate that it is well in the art depending on the needs of the application to designate pre-determined energy windows (see for example *Horrocks* at col. 1, lines 20-29). *Iwatschenko-Borho* further discloses that by dividing the measured radiation into discrete counting channels, better monitoring of background equilibrium as well as comparison of changes in particular windows allows for increase in reliability over traditional counting methods (see generally ¶¶ 0102-0106). As such, it would have been obvious to modify the suggested method to further include the use of predetermined windows comprised of at least one energy channel in order to allow for more accurate measurements with higher degree of reliability.

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Regarding claim 45, the absent some degree of criticality, the choice of the number of channels and the manner of determining the number it is viewed as a matter of routine design choice.

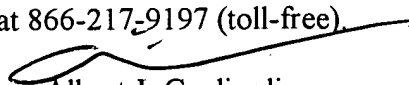
Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert J. Gagliardi whose telephone number is (571) 272-2436. The examiner can normally be reached on Monday thru Friday from 10 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Albert J. Gagliardi
Primary Examiner
Art Unit 2884

AJG